

WHAT IS CLAIMED IS:

1. A method for managing a plurality of multifunction network devices on a network, each multifunction network device having a plurality of hardware resources including a storage memory for storing a plurality of function modules, a program memory for use by the function modules and a processor for executing each of the function modules, said method comprising the steps of:

detecting a reconfiguration event for one of the plurality of multifunction network devices;

sending a reconfiguration command to the one multifunction network device, the reconfiguration command being a deletion command to delete at least one of the function modules or a reallocation command to reallocate an amount of at least one of the hardware resources available for use by each of the plurality of function modules; and

receiving confirmation that the one multifunction network device has been reconfigured in accordance with the reconfiguration command.

2. A method according to Claim 1, wherein the reconfiguration event is a request for execution of one of the plurality of function modules by the one multifunction network device.

3. A method according to Claim 1, wherein the reconfiguration event is a trigger set by a configurator module executing in a computing device on the network.

4. A method according to Claim 3, wherein the trigger is set in response to a detection by the configurator module of an increased demand for use of the storage memory and of the program memory in the one multifunction network device.

5. A method according to Claim 4, wherein the detection by the configurator module of an increased demand for use of the storage memory and of the program memory is based on resource information data which is passed from the one multifunction network device to the configurator module.

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6. A method according to Claim 5, wherein the resource information data includes a current utilized amount of the storage memory and a current utilized amount of the program memory of the one multifunction network device.

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7. A method according to Claim 5, wherein the resource information data is passed in an SNMP message from the one multifunction network device to the configurator module.

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8. A method according to Claim 3, wherein the trigger is set by the configurator module based on receipt of a request message by the configurator module from the one multifunction network device.

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9. A method according to Claim 8, wherein the request message comprises a request by the one multifunction network device for an increased useable capacity of the storage memory and of the program memory in the one multifunction network device.

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10. A method according to Claim 8, wherein the request message is passed in an SNMP message from the one multifunction network device to the configurator module.

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11. A method according to Claim 3, wherein the configuration module monitors an overall demand for execution of each of the plurality of functions by the plurality of multifunction network devices, and wherein the trigger is set by the configurator module based on a detected increase in the overall demand for execution of one of the plurality of functions.

12. A method according to Claim 11, wherein the configuration module monitors the overall demand for execution of each of the plurality of functions by monitoring a plurality of function request messages which are sent to the plurality of multifunction network devices.

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13. A method according to Claim 1, wherein the one multifunction network device is reconfigured in accordance with the reconfiguration command by deleting at least one of the function modules from the storage memory.

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14. A method according to Claim 1, wherein the one multifunction network device is reconfigured in accordance with the reconfiguration command by deleting all of the function modules except one designated function module from the storage memory.

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13. A method according to Claim 1, wherein the one multifunction network device is reconfigured in accordance with the reconfiguration command by prohibiting the use of program memory for at least one of the function modules.

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14. A method according to Claim 1, wherein the one multifunction network device is reconfigured in accordance with the reconfiguration command by prohibiting the use of program memory for all of the function modules except a designated function module.

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15. A method according to Claim 1, wherein the one multifunction network device is reconfigured in accordance with the reconfiguration command by reallocating a designated amount of the program memory for use by each of the function modules.

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16. A method according to Claim 1, wherein the one multifunction network device is reconfigured in accordance with the

reconfiguration command by instructing an operating system in the one multifunction network device to respond only to a function request message which requests execution of a designated function module.

5                   17. A method according to Claim 1, wherein in the sending step the reconfiguration command can further be selected from an addition command to add a designated function module to the storage memory and the program memory of the one multifunction network device.

10                   18. A method according to Claim 17, wherein the reconfiguration event is a trigger set by a configurator module executing in a server on the network, and the trigger is based on a detection by the configurator module that the one multifunction device has a decreased demand for use of the storage memory and of the program memory.

15                   19. A method according to Claim 18, wherein the detection by the configurator module of an decreased demand for use of the storage memory and of the program memory is based on resource information data which is passed from the one multifunction network device to the configurator module.

20                   20. A method according to Claim 19, wherein the resource information data includes a current utilized amount of the storage memory and a current utilized amount of the program memory of the one multifunction network device.

25                   21. A method according to Claim 19, wherein the resource information data is passed in an SNMP message from the one multifunction network device to the configurator module.

30                   22. A method according to Claim 17, wherein the reconfiguration event is a trigger set by a configurator module executing in a

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server on the network, and the trigger is based on an expiration of a predetermined time duration which was initiated at a last reconfiguration event for the one multifunction device.

5                   23. A method according to Claim 17, wherein the reconfiguration event is a trigger set by a configurator module executing in a server on the network, and the trigger is based on receipt of a request message by the configurator module from the one multifunction network device.

10                   24. A method according to Claim 23, wherein the request message comprises a request by the one multifunction network device for the addition of at least one function module to the storage memory and to the program memory in the one multifunction network device.

15                   25. A method according to Claim 17, wherein the reconfiguration event is a trigger set by a configurator module executing in a server on the network, and the trigger is based on discovery by the configurator module of the one multifunction network device on the network.

20                   26. A method according to Claim 25, wherein the one multifunction network device is discovered by detection of an SNMP announcement message sent over the network by the one multifunction network device.

25                   27. A method according to Claim 17, wherein, in the case that the reconfiguration command is an addition command to add a designated function module to the storage memory and the program memory of the one multifunction network device, the designated function module is downloaded to the one multifunction network device.

30                   28. A method according to Claim 27, wherein the designated function module is downloaded to the one multifunction network device from

a component repository module in response to an instruction from a configurator module.

5           29. A method according to Claim 28, wherein the component repository module and the configurator module are executing on a same computing device on the network.

10           30. A method according to Claim 28, wherein the component repository module and the configurator module are executing on a separate respective computing devices on the network.

          31. A method according to Claim 28, wherein the component repository module executes on a server on the network.

15           32. A method according to Claim 28, wherein a version identification of the designated function module is provided in the instruction from the configurator module to the component repository module.

20           33. A method according to Claim 32, wherein the version identification is determined in accordance with a preset profile corresponding to the one multifunction network device.

25           34. A method according to Claim 33, wherein the preset profile corresponding to the one multifunction network device contains information regarding allowed function modules that can be downloaded to the one multifunction network device and a version identification for each of the allowed function modules.

30           35. A method according to Claim 27, wherein the designated function module is downloaded to the one multifunction network device from a component repository module in response to an instruction from the one multifunction network device.

36. A method according to Claim 35, wherein a version identification of the designated function module is provided in the instruction from the one multifunction network device to the component repository module.

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37. A method according to Claim 1, wherein the reconfiguration event is a trigger set by the one multifunction network device based on a determination by the one multifunction network device that there is a need for an increased useable capacity of the storage memory and of the program memory in the one multifunction network device.

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38. A method according to Claim 37, wherein the reconfiguration command is sent internally within the one multifunction network device which is reconfigured in accordance with the reconfiguration command by deleting all of the function modules except one designated function module from the storage memory and from the program memory.

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39. A method according to Claim 38, wherein the deleted function modules are sent from the one multifunction network device to a component repository on the network, and wherein the deleted modules are subsequently retrieved by the one multifunction network device from the component repository and added to the storage memory and to the program memory.

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40. A method for managing a plurality of multifunction network devices on a network, each multifunction network device having a plurality of hardware resources including a storage memory for storing a plurality of function modules, a program memory for use by the function modules and a processor for executing each of the function modules, said method comprising the steps of:

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detecting a first reconfiguration event for one of the plurality of multifunction network devices, the first reconfiguration event being based on

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an increased need for usable capacity of the storage memory and of the program memory by a designated one of the plurality of function modules;

5            sending a first reconfiguration command, in response to detection of the first reconfiguration event, to the one multifunction network device, the first reconfiguration command comprised of a command to delete all of the function modules except for the designated function module from the storage memory and from the program memory of the one multifunction network device;

10           receiving confirmation that the one multifunction network device has been reconfigured by deleting all of the function modules except the designated function module from the storage memory and from the program memory of the multifunction network device in response to first reconfiguration command;

15           detecting a second reconfiguration event for the one multifunction network device, the second reconfiguration event being based on a decreased need for usable capacity of the storage memory and of the program memory by a designated one of the plurality of function modules;

20           sending a second reconfiguration command, in response to the detected second reconfiguration event, to the one multifunction network device, the second reconfiguration command comprised of a command to download all of the function modules that were previously deleted in response to the first reconfiguration command, and to add the downloaded function modules to the storage memory and to the program memory of the one multifunction network device; and

25           receiving confirmation that the one multifunction network device has been reconfigured by downloading and adding the previously deleted function modules to the storage memory and to the program memory of the multifunction network device in response to the second reconfiguration command.

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41.     A computing device for managing a plurality of multifunction network devices on a network, each multifunction network



device having a plurality of hardware resources including a storage memory for storing a plurality of function modules, a program memory for use by the function modules and a processor for executing each of the function modules, said computing device comprising:

- 5                   a program memory for storing process steps executable to perform a method according to any of Claims 1 to 40; and
- a processor for executing the process steps stored in said program memory.

10                   42.     Computer-executable process steps stored on a computer readable medium, said computer-executable process steps for managing a plurality of multifunction network devices on a network, each multifunction network device having a plurality of hardware resources including a storage memory for storing a plurality of function modules, a program memory for use

15     by the function modules and a processor for executing each of the function modules, said computer-executable process steps comprising process steps executable to perform a method according to any of Claims 1 to 40.

20                   43.     A computer-readable medium which stores computer-executable process steps, the computer-executable process steps to manage a plurality of multifunction network devices on a network, each multifunction network device having a plurality of hardware resources including a storage memory for storing a plurality of function modules, a program memory for use

25     by the function modules and a processor for executing each of the function modules, said computer-executable process steps comprising process steps executable to perform a method according to any of Claims 1 to 40.

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